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H-78575B

January 4, 1995

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NASA
Marshall Space Flight Center, AL 35812

This Final Report summarizes the activities performed by Science Applications International Corporation (SAIC) under Purchase Order H-78575B "AR&C Ground Project Planning Technical Schedules Analysis". This Purchase Order provided technical services to the Marshall Space Flight Center's AR&C Business Management Office for the period April 22, 1994 through December 31, 1994.

The major thrust of the services provided to the AR&C Business Management Office consisted of two major tasks. One involved the orientation and training of Ms. Carolyn Clifford, the new AR&C Program Analyst. Ms. Clifford was familiarized with the current AR&C programmatic and technical activities, the layout and logic of the AR&C schedules, and trained in the usage of FastTrack Schedule. The second was the development and baselining of schedules for the ground program.

In addition, SAIC participated in a May 1994 Quarterly Review, an August 1994 Status Review, a November 1994 Quarterly Review, monthly schedule inputs to the Lenoir Report, and weekly Systems Engineering & Integration meetings. Specifically, this participation involved interfacing with engineering personnel to obtain data for the development of detailed technical schedules and providing in-depth analysis of product need dates and the inter-relationships of technical tasks and schedules. For the Quarterly Reviews, each schedule was developed with the collaboration of the responsible design engineers and then presented by that engineer at the review.

During this period of performance, due primarily to budget uncertainties, the AR&C project has continued to re-plan for a ground program. The program currently utilizes six top level and detailed schedules to capture product need dates and the inter-relationships of technical tasks. These schedules include the Top Level, Systems Engineering, Hardware Development, Software Development, System Verification, and the Near Term Milestones. The Top Level schedule is used most often to depict the status of the program, while the other schedules are used to track the lower, more detailed levels of work being performed by AR&C personnel and to feed the Top Level schedule.

The re-planning for a ground program required frequent, major changes to the program schedules. Due to this frequency of changes, the program office decided to allow unlimited modification to the Top Level schedule until the May 1994 Quarterly Review at which time this schedule was baselined at Mr. Gene Beam's request. Due to the fact that the detailed schedules capture data at such a low level we did not present these

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schedules at the May Quarterly and allowed unchallenged changes to be made until September 1994 at which time they were baselined. This additional time was necessary due to the changeable nature of the program and to aid the responsible design engineers in planning low level programmatic and technical activities on a time scale that they felt confident they could meet.

Since the schedules have been baselined, changes that impact the delivery of an item, the start date of another activity, or the date of the final system test require a "AR&C Schedule Change Request Form" to be filed with the AR&C Business Management Office. That change must be justified by the responsible design engineer and approval must be gained from Mr. Dallais Pearson, the AR&C Chief Engineer, and Mr. Gene Beam, the AR&C Project Manager. The baselining of the schedules has provided a discipline in the system and has dramatically decreased the number of schedule changes. This has forced the engineers involved to be more aware of the schedule impacts and the inter-relationships of the total program.

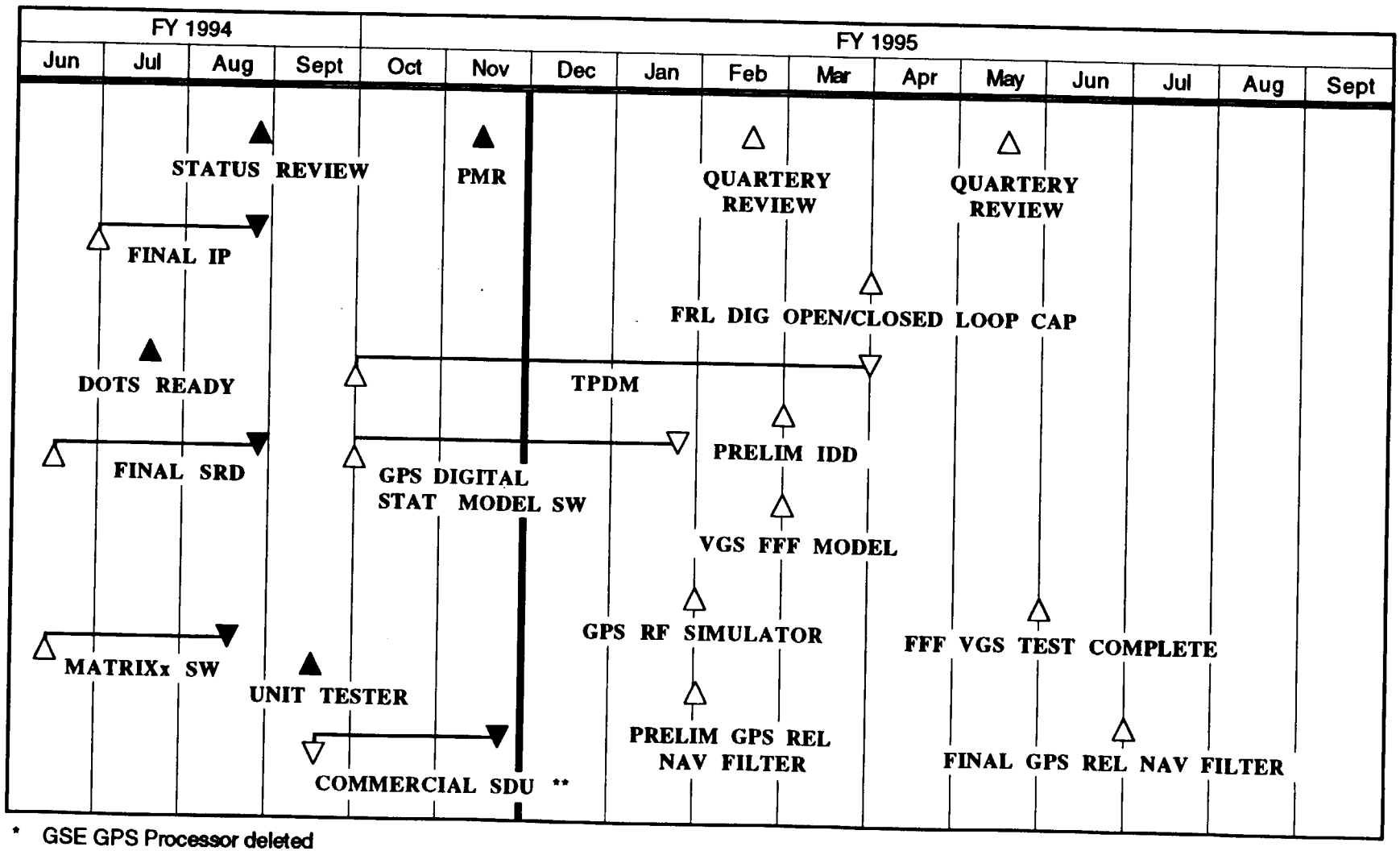
A need continues to exist in the AR&C Business Management Office for technical schedule analyses. However, the analyses need to be expanded to involve the use of schedules as a tool for problem tracking, program control, and budget analysis. This broadened activity would be extremely useful to the AR&C program in determining budget impacts based on schedule changes and would prove invaluable for the continued development and implementation of the AR&C ground program. In addition, the program could use a management information system that integrates the costs and schedules and provides tracking of the procurement and financial data. SAIC has extensive experience with scheduling and networking for the AR&C program and has a full understanding of the current state of the program. SAIC is fully capable of delivering this expanded level of management and technical analyses in a timely manner.

Attached are the latest baselined AR&C program schedules. These schedules have been significantly improved in continuity and logic when compared to those schedules that existed in April 1994. While the transition from a flight program to a ground program has been difficult and has required constant revision of the schedules, the attached schedules accurately and thoroughly depict the current AR&C ground program.

NEAR-TERM SCHEDULE

PROGRAM/CENTER: AR&C/MSFC
(GROUND PROGRAM)

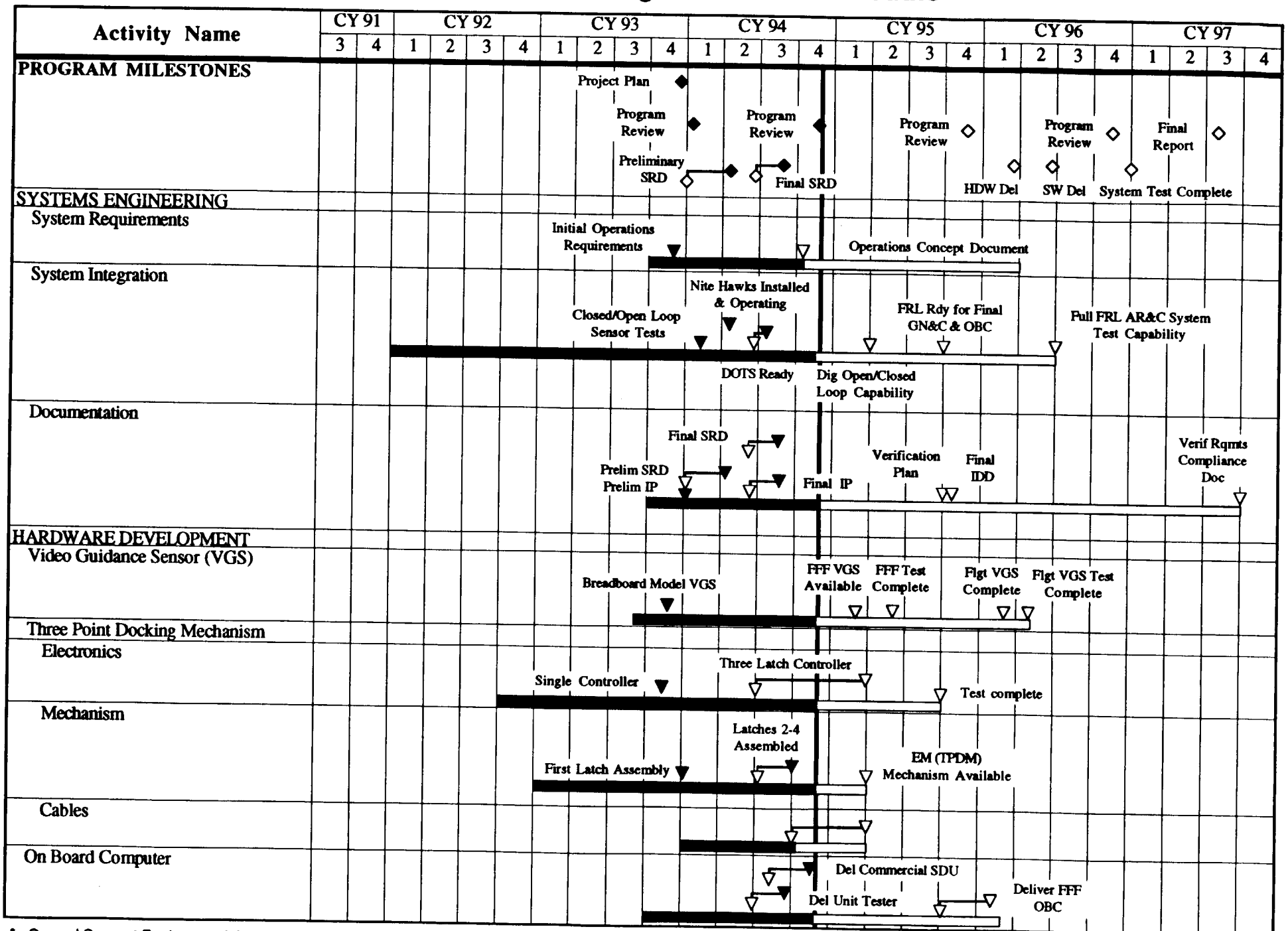
PROJECT/CONTRACT: AR&C - N/A



* GSE GPS Processor deleted
** Commercial FEU changed to Commercial SDU

A/O: 11/30/94

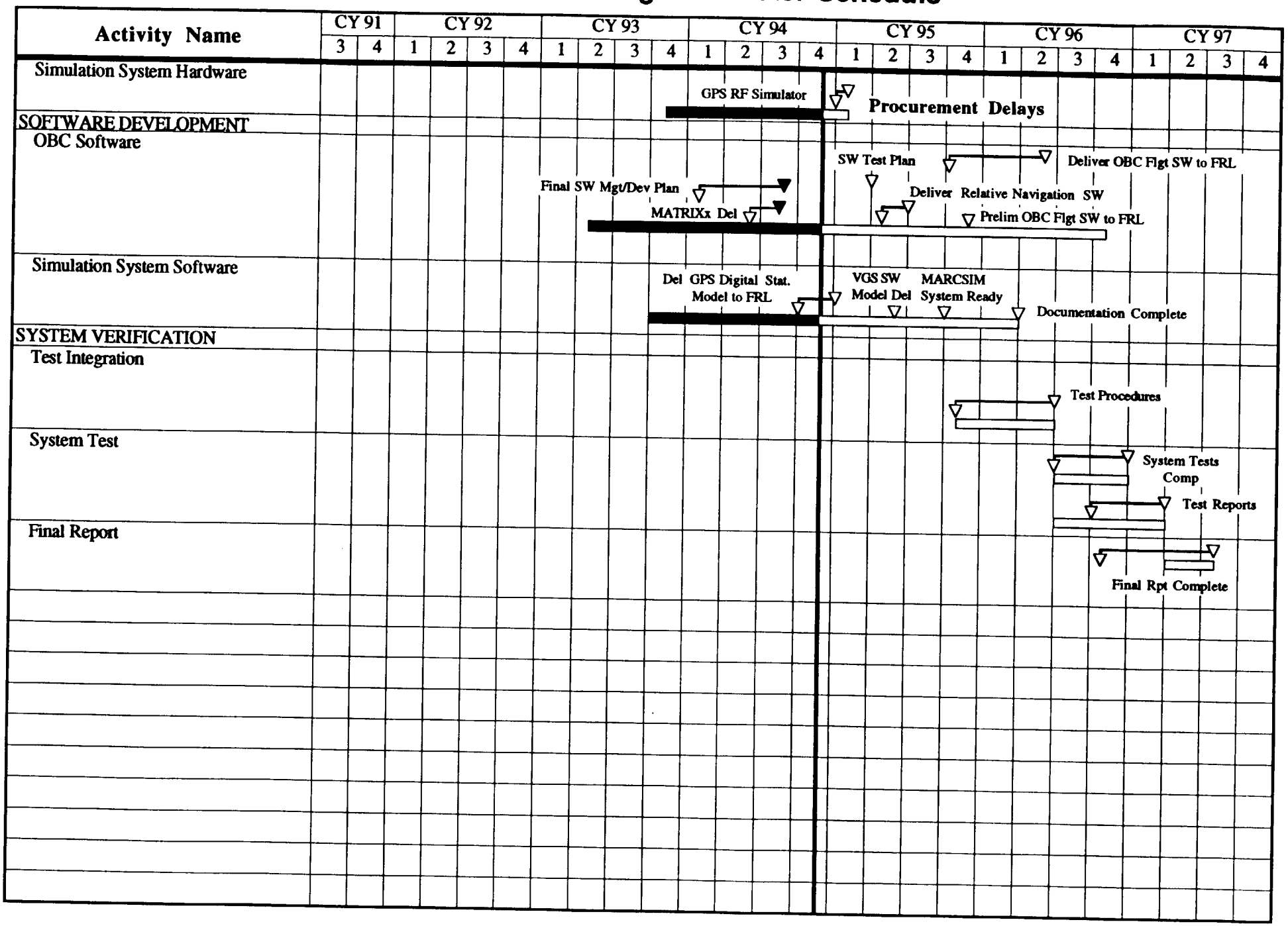
AR&C Ground Program Master Schedule



* Ground Support Equipment deleted from HW Dev.

A/O: 11/30/94

AR&C Ground Program Master Schedule



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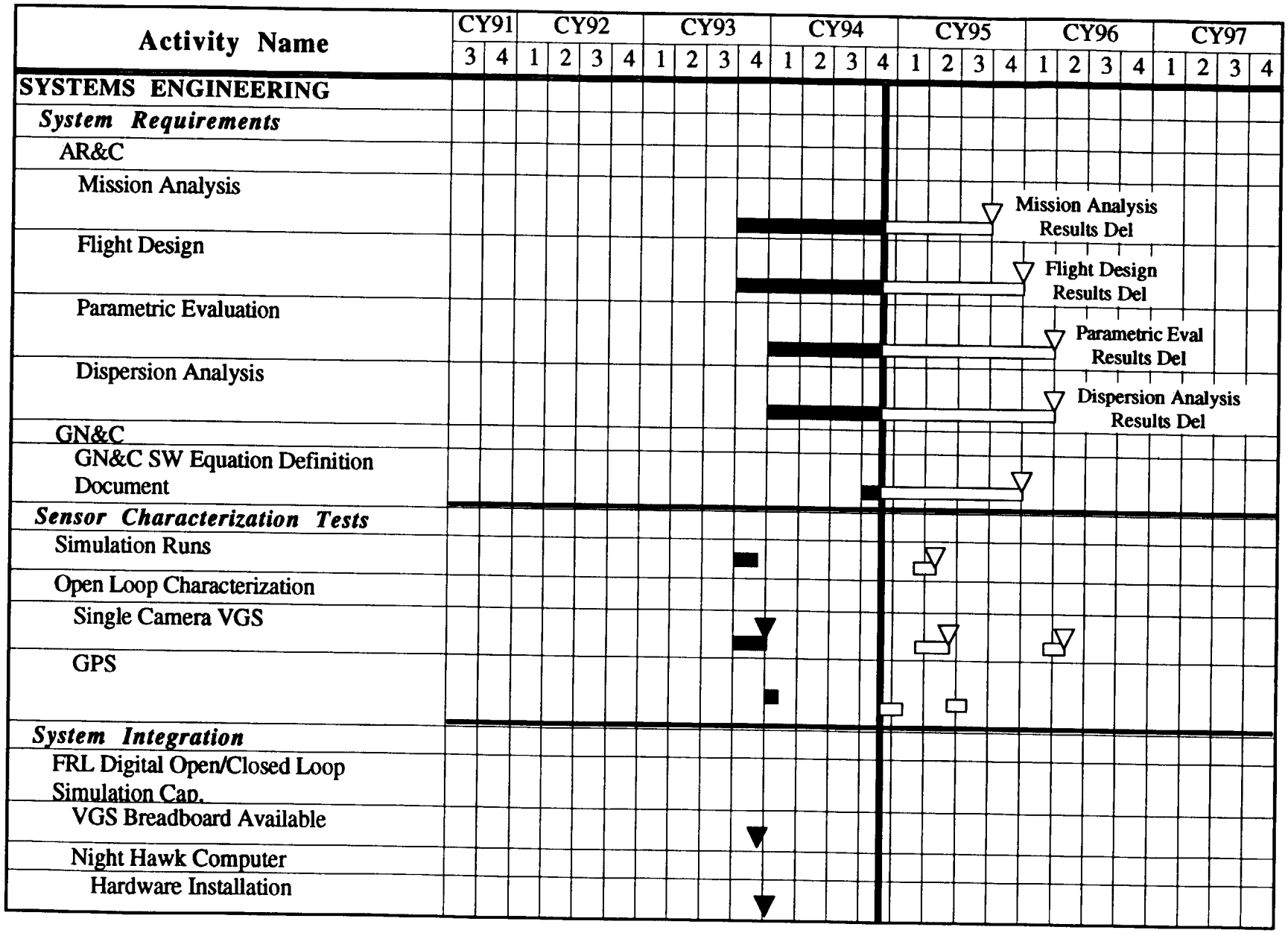
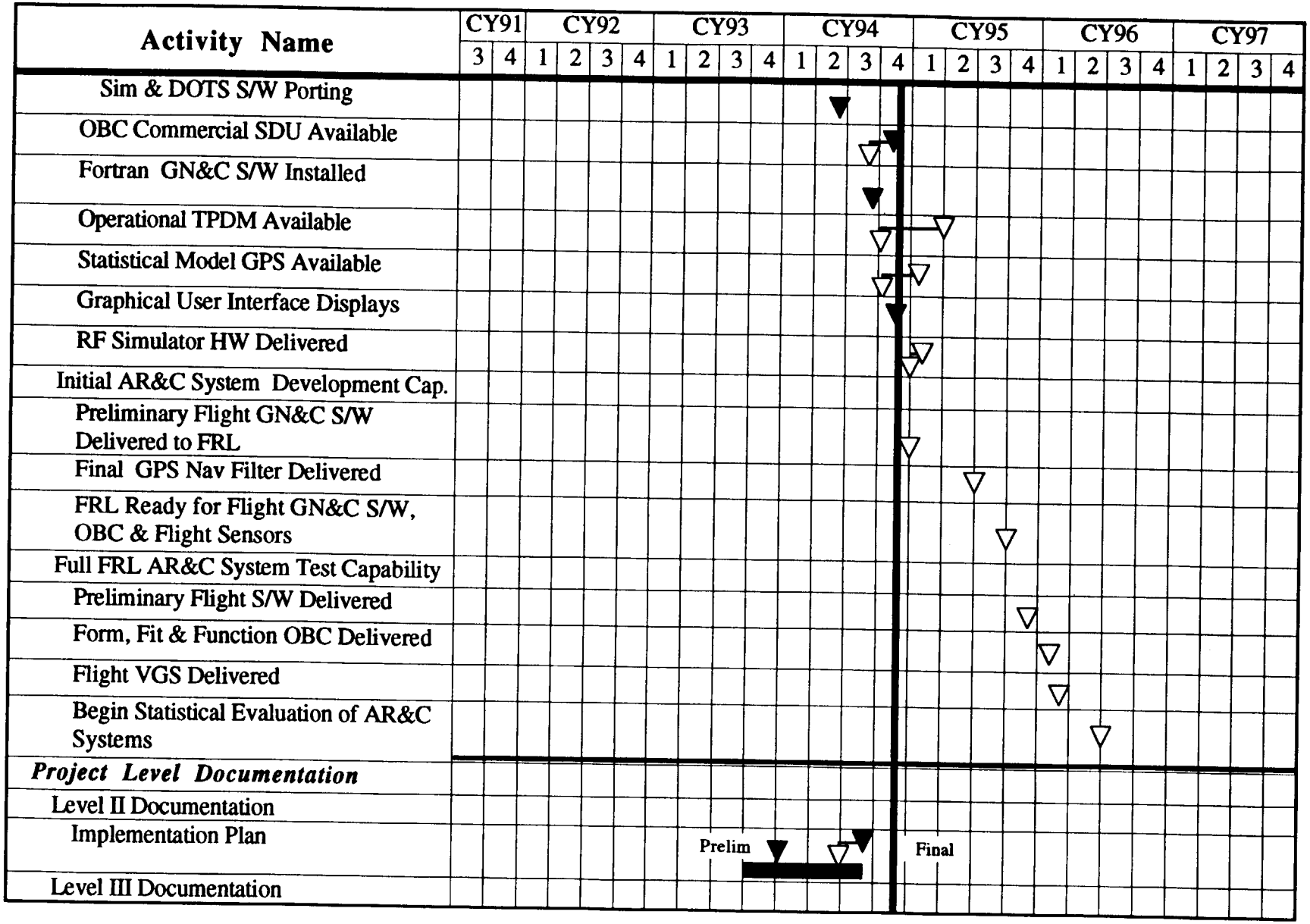
A/O: 11/30/94

AR&C Systems Engineering Schedule - Baseline



Nov 30, 1994

AR&C Systems Engineering Schedule - Baseline



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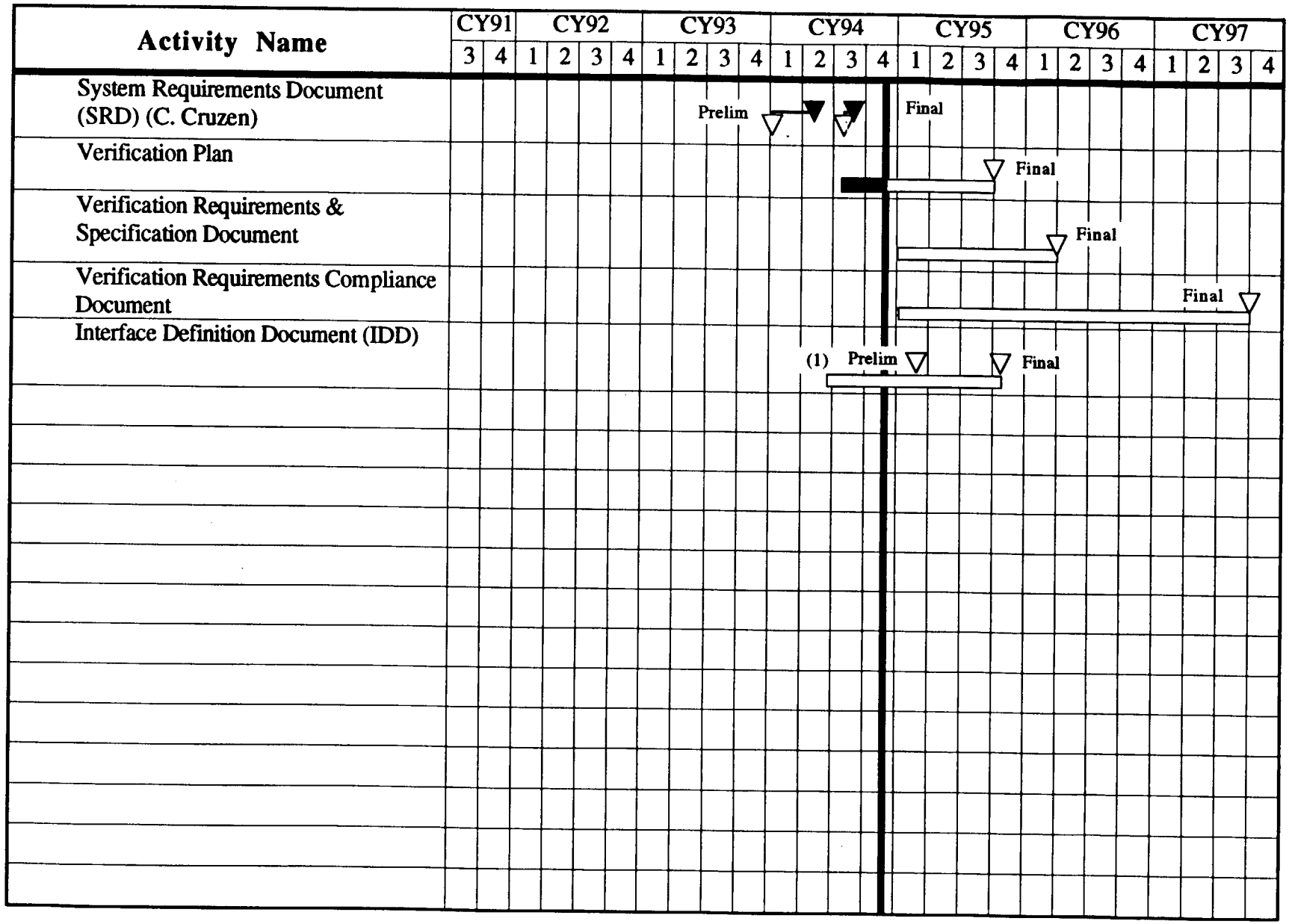
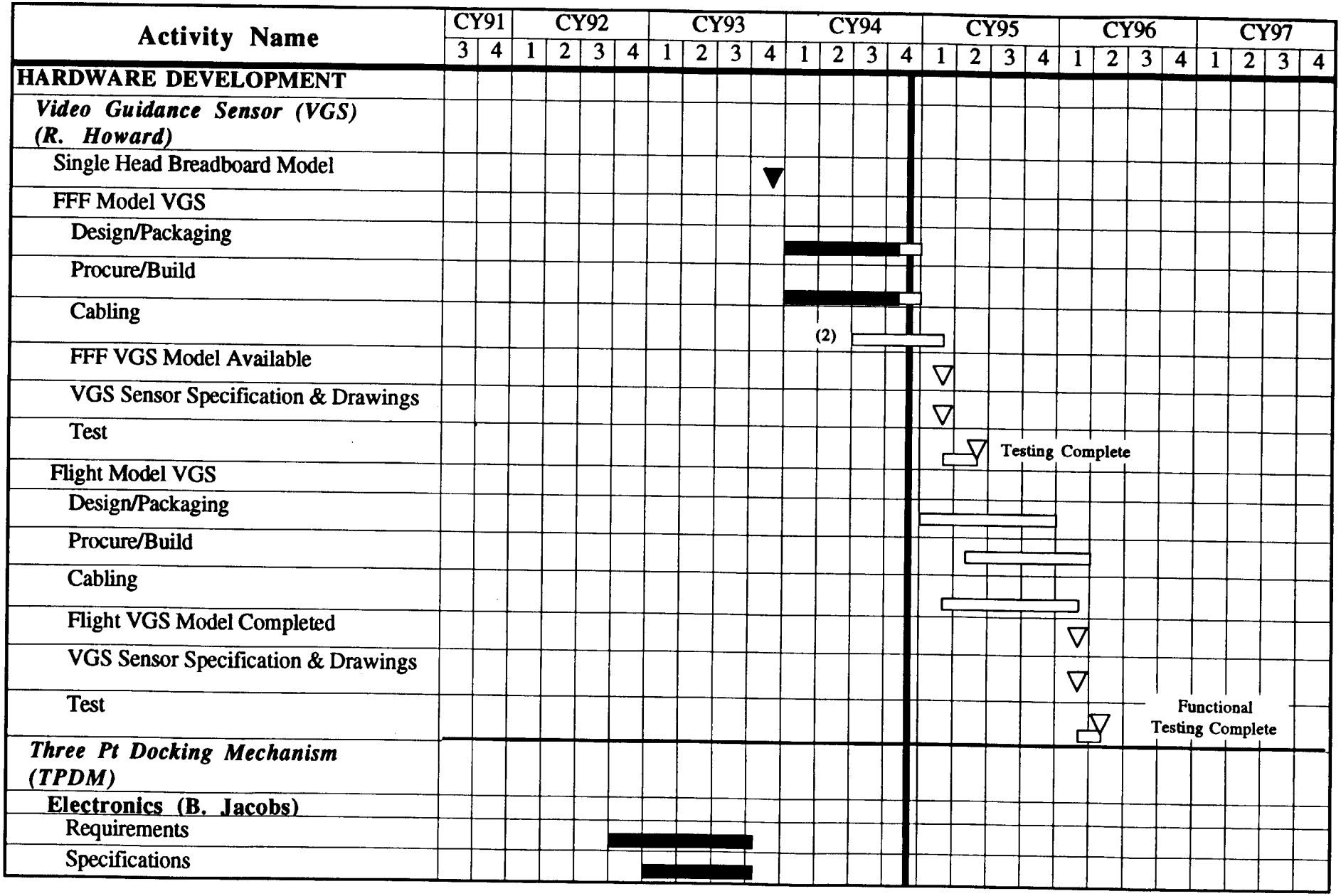
AR&C Systems Engineering Schedule - Baseline



AR&C Hardware Development Schedule - Baseline



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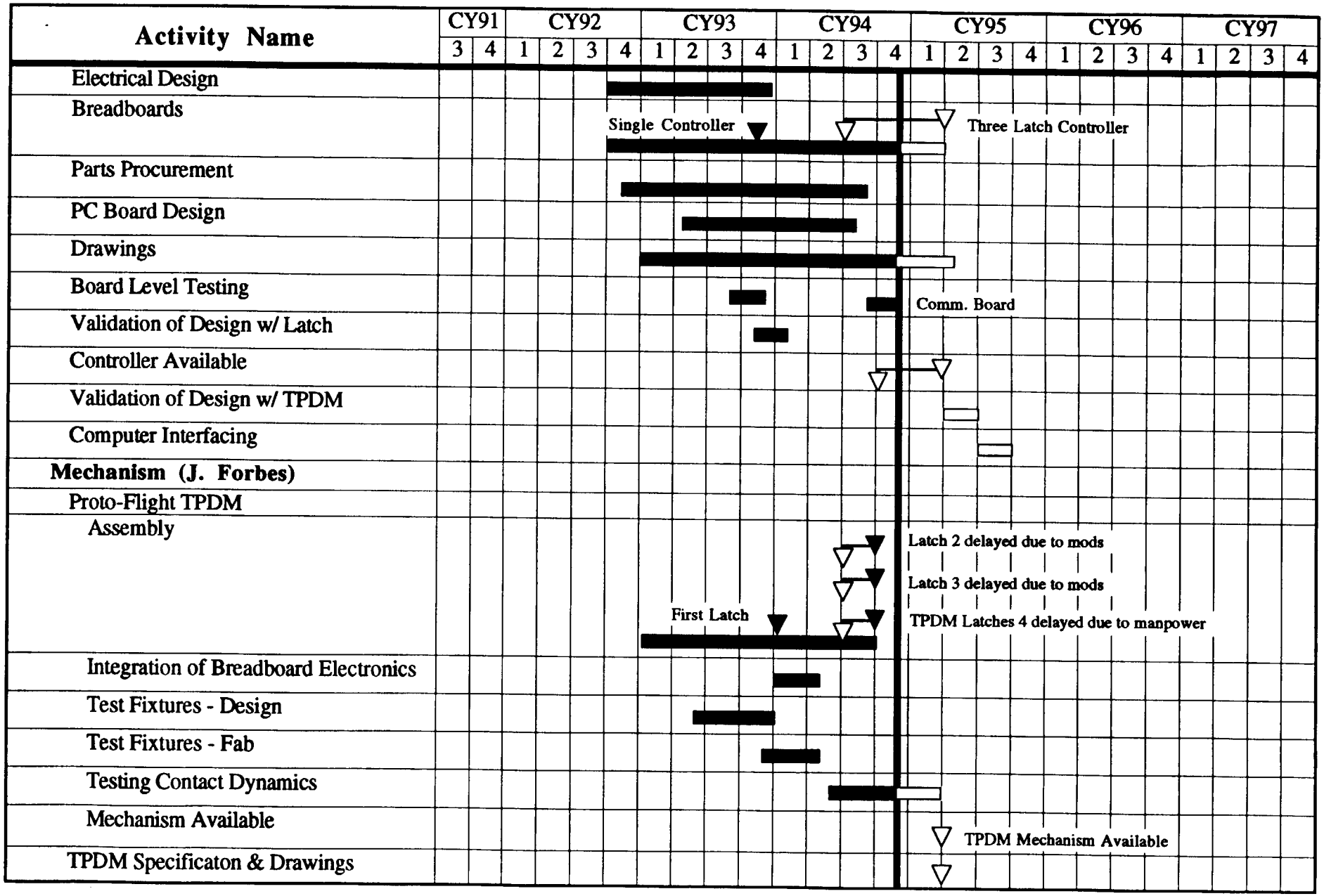

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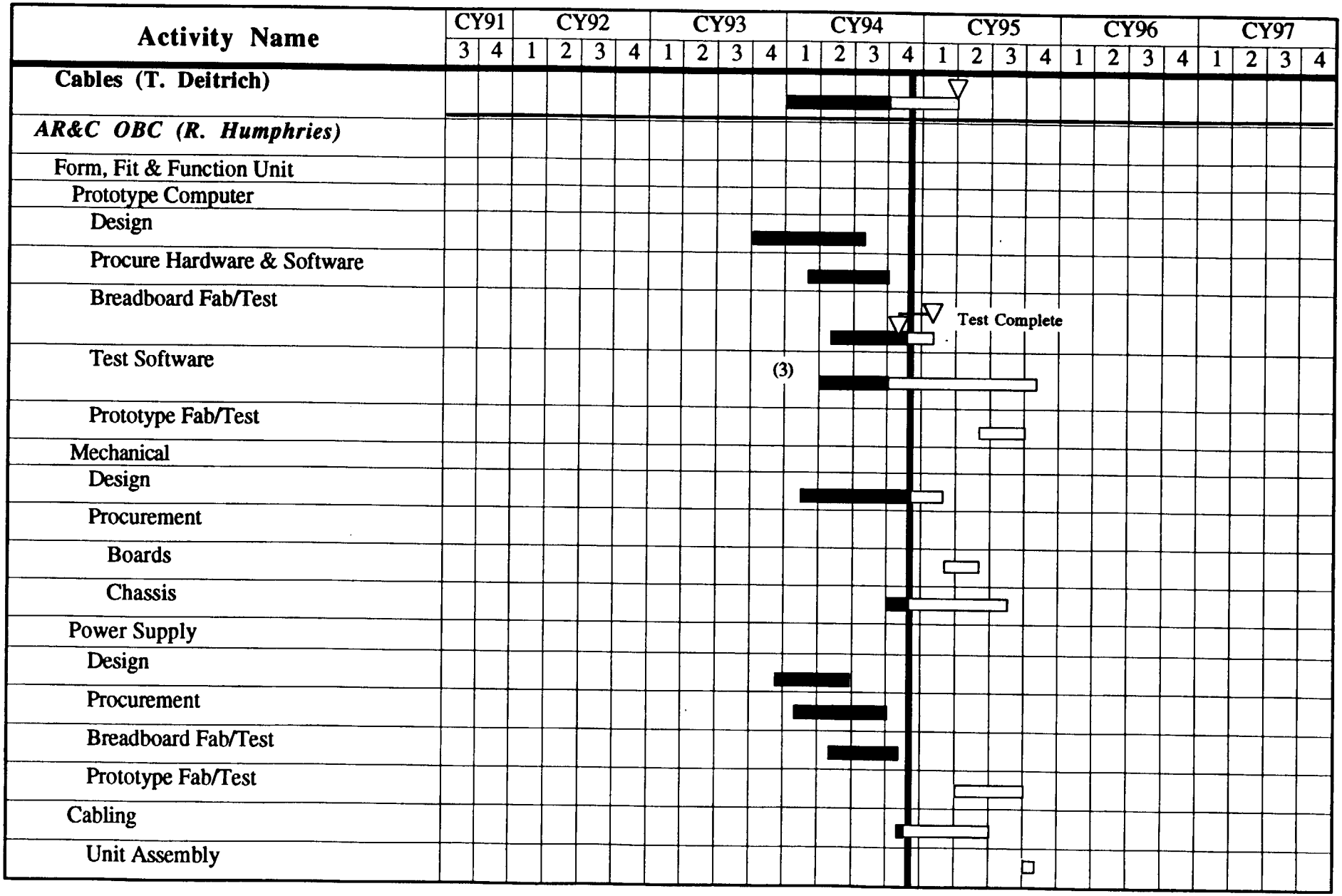

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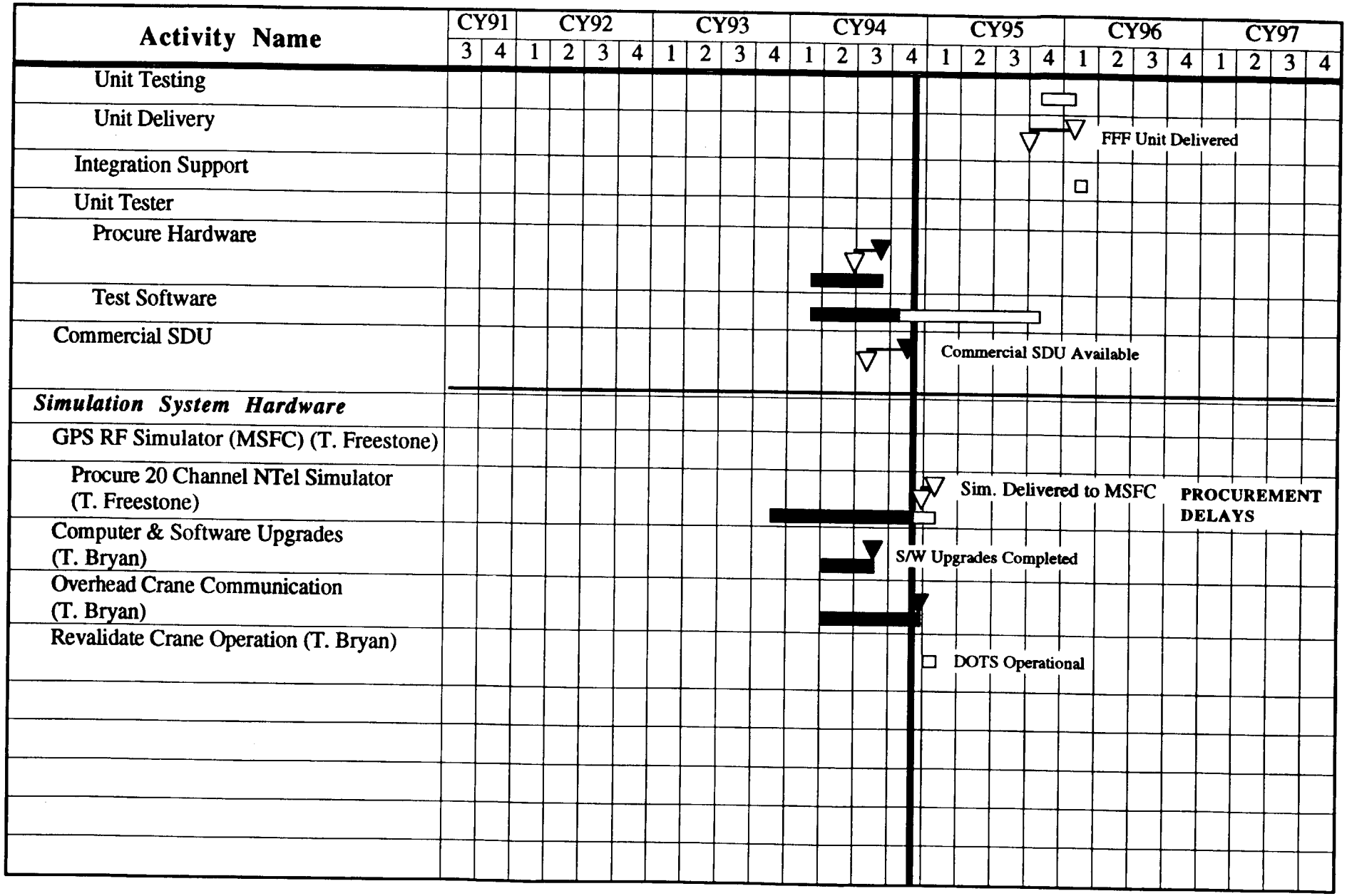

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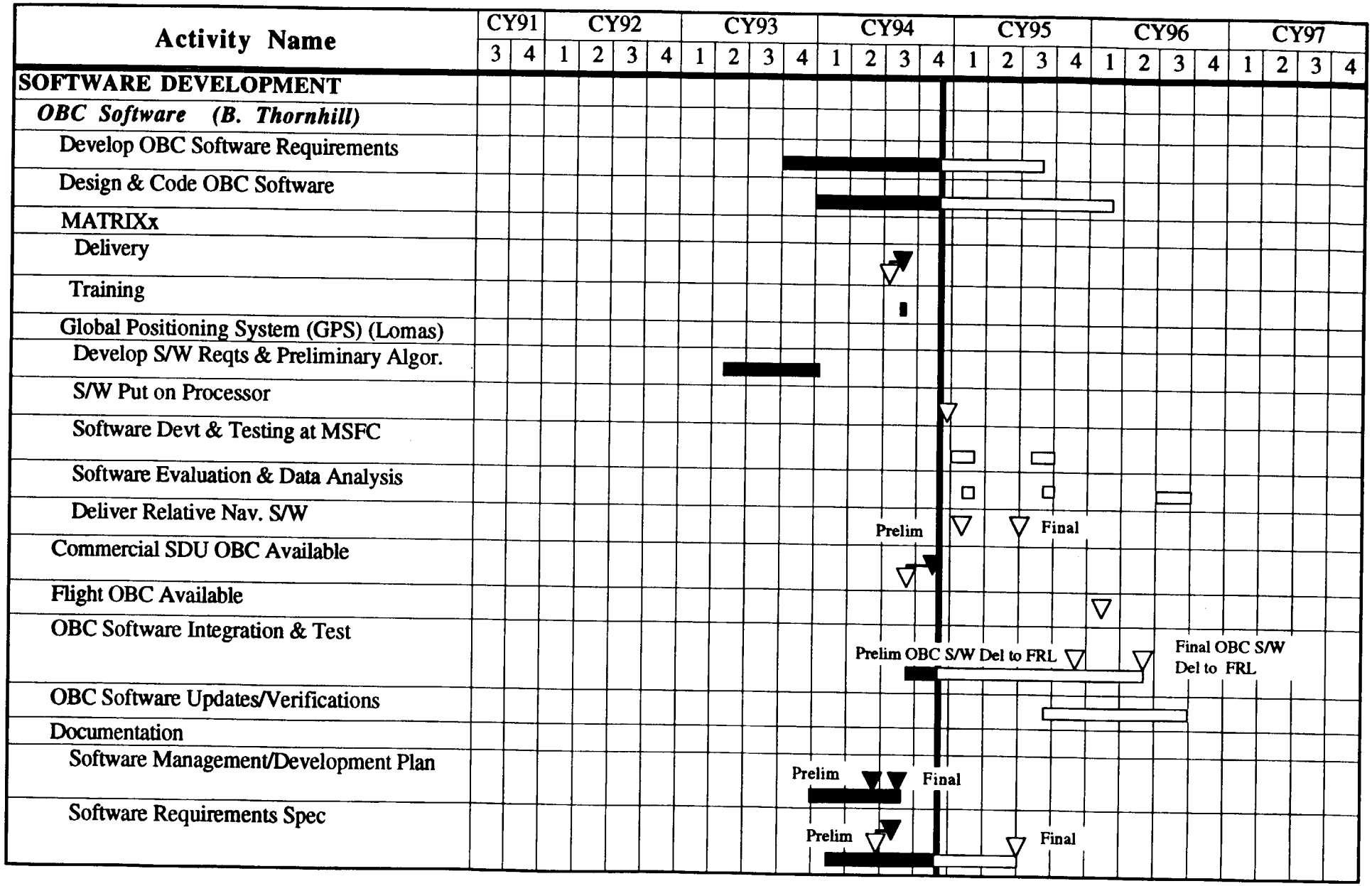
AR&C Software Development Schedule - Baseline



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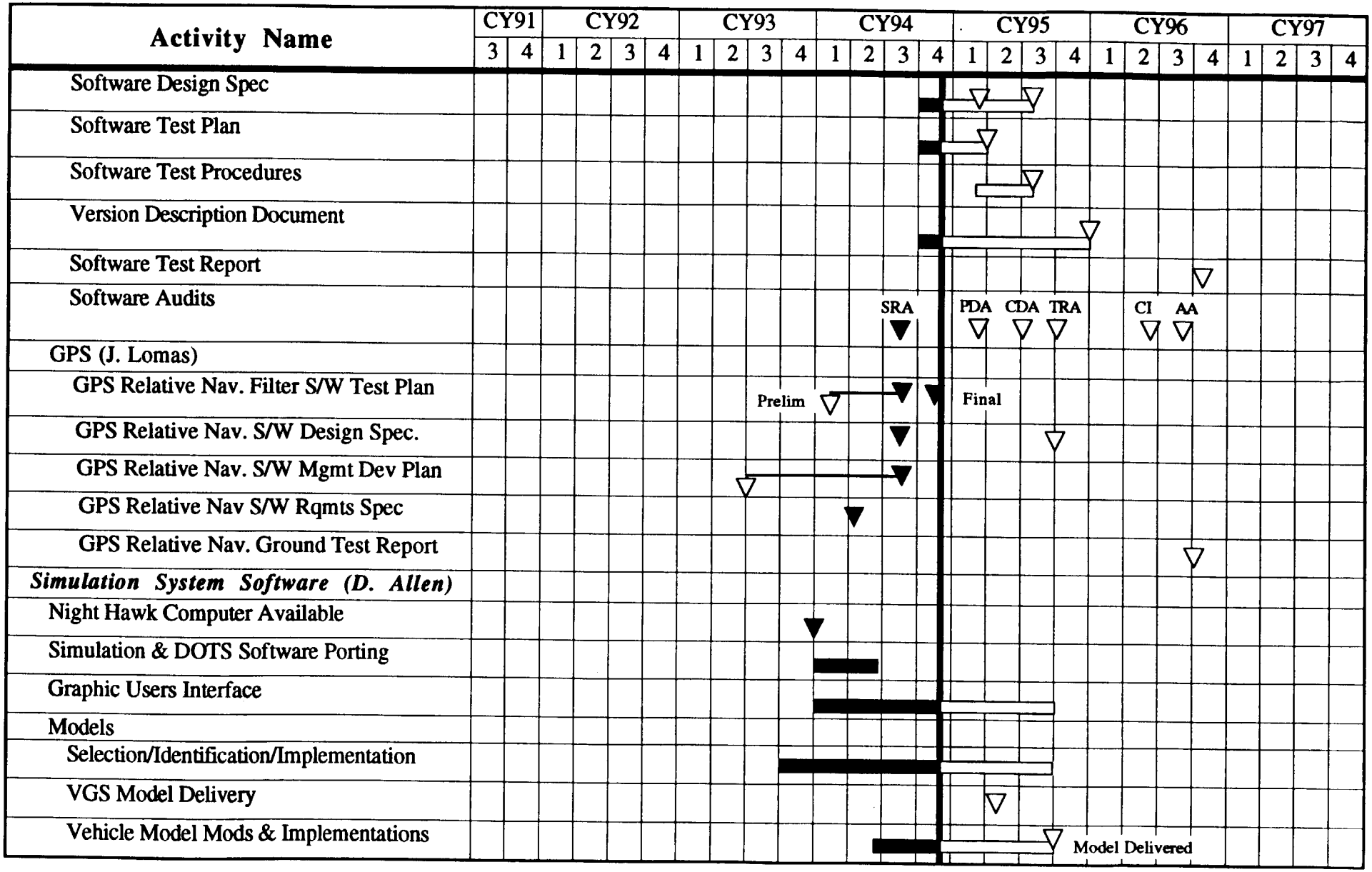
AR&C Software Development Schedule - Baseline



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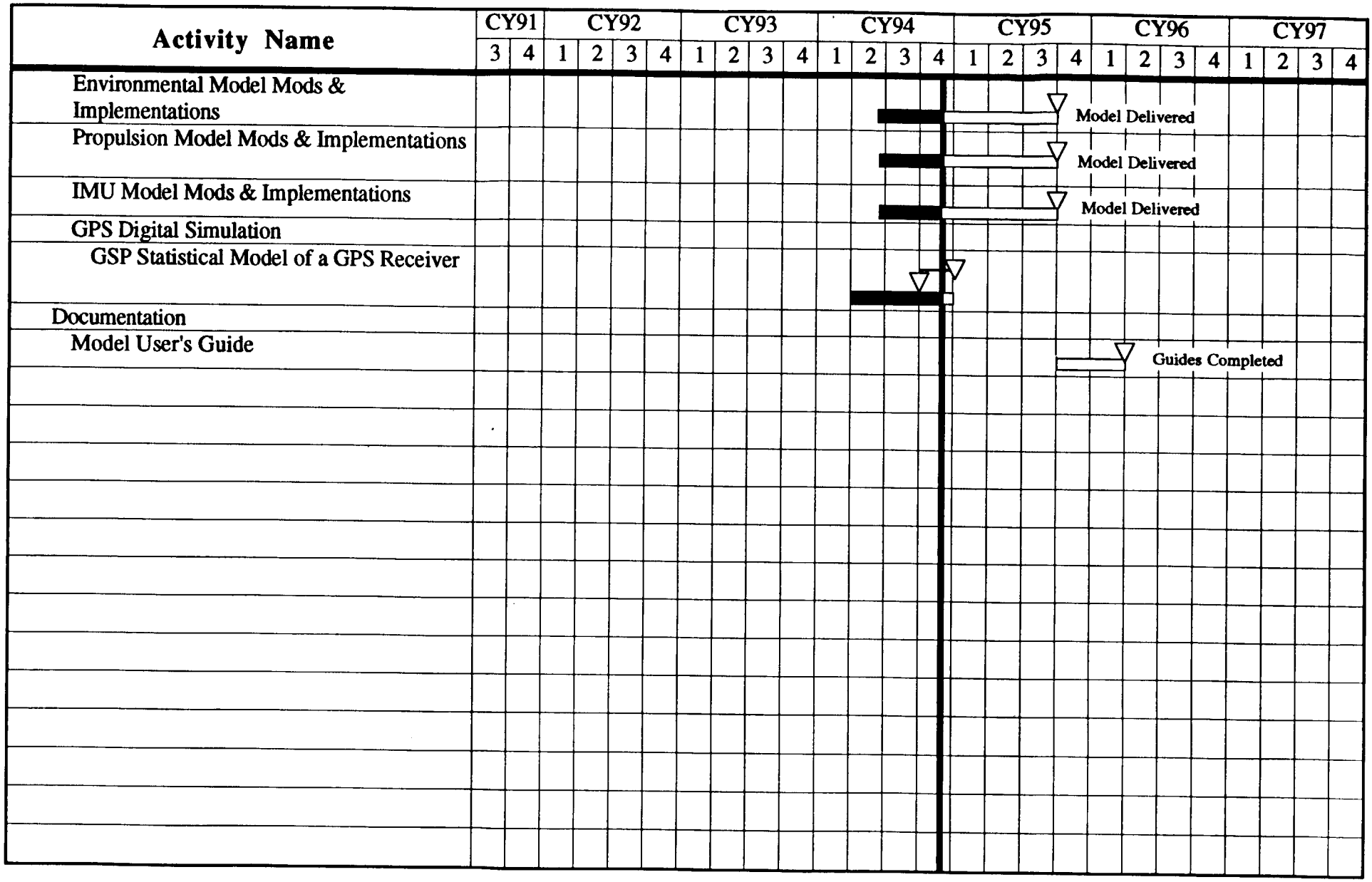

AR&C System Verification Schedule - Baseline

Activity Name	CY91		CY92				CY93				CY94				CY95				CY96				CY97			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SYSTEM VERIFICATION																										
Test Integration																										
Installation & Prep of OBC Computer																										
Installation & Prep of VGS																										
Installation & Prep of TPDM																										
FRL & Prep of Sim Sys Computer																										
Test Procedures																										
System Test																										
Design Verification																										
Full System Demonstration																										
OFF Nominal Conditions (Fault Tolerance)																										
Installation & Prep Nav Filter																										
Test Eval & Sim Lab Technical Support																										
System Test Complete																										
Test Reports Complete																										
Final Report																										
Data Evaluation																										
Final Report																										

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